AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) In a computerized system, a method of ~~identifying~~ generating an optimum sub̲set of product configurations from a plurality of possible product configurations associated with a product, ~~each product configuration having a plurality of selectable features, each selectable feature having a plurality of options,~~ comprising the steps of:

receiving product configuration data relating to the plurality of possible product configurations, wherein each product configuration includes a plurality of selectable features, each selectable feature including a plurality of options;

receiving historical demand data associated with the plurality of possible product configurations;

arranging the product configuration data into ~~representing each of the plurality of possible product configurations as an~~ ordered set̲s of dimensions, wherein each ordered set of dimensions represents one of the plurality of possible product configurations, wherein each selectable feature of each product configuration is ~~being~~ represented by one respective dimension of [[the]] each ordered set;

applying mix-and-match rules to the ordered sets of dimensions to identify~~ing~~ a plurality of valid ordered sets of dimensions representing valid product configurations as a subset of the plurality of possible product configurations;

~~defining configuration neighborhoods that identify at least one valid product configuration captured by another valid product configuration;~~

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defining an optimization model to identify the optimum <u>sub</u>set of valid product configurations <u>from the plurality of valid ordered sets of dimensions</u> based on a desired objective <u>and based on the historical demand data</u>;

solving the optimization model~~; and presenting~~ <u>to generate</u> the optimum <u>sub</u>set of valid product configurations that satisfy the desired objective<u>; and</u>[[.]]

<u>outputting the generated optimum subset of valid product configurations that meet the desired objective.</u>

2. (Original) The method of claim 1 further comprising the step of associating a cost and a revenue to each valid product configuration.

3. (Original) The method of claim 2 wherein the cost associated with each valid product configuration is comprised of a plurality of per option costs.

4. (Canceled)

5. (Currently Amended) The method of claim <u>1</u> [[4]] wherein the <u>historical</u> demand <u>data</u> associated with <u>the plurality of possible</u> ~~each valid~~ product configuration<u>s</u> is based on the demand of each respective option of ~~the valid~~ <u>each respective</u> product configuration.

6. (Currently Amended) The method of claim 1 wherein the desired objective is to maximize the profit of a manufacturer or retailer of the product[[s]].

7. (Currently Amended) The method of claim 1 wherein the desired objective is to minimize the costs of a manufacturer of the product[[s]].

8. (Currently Amended) The method of claim 1 wherein the desired objective is to maximize coverage of customer demand <u>for the product</u>.

9. (Currently Amended) The method of claim 1 wherein the optimization model is defined ~~when~~ such that the number of product configurations in the optimum subset of valid product configurations is fixed.

10. (Currently Amended) The method of claim 1 wherein the optimization model is defined ~~when~~ such that the number of product configurations in the optimum subset of valid product configurations is variable.

11. (Currently Amended) The method of claim 1 wherein the dimensions of the ordered sets represent the selectable features in a fixed and non-modifiable order.

12. (Currently Amended) The method of claim 1 wherein the ~~step of identifying the valid product configurations comprises the steps of applying~~ mix-and-match rules [[to]] identify invalid or impermissible product configurations.

13. (Currently Amended) The method of claim 1 [[12]] wherein the step of applying mix-and-match rules to the ordered sets of dimensions to identif~~ying~~ the valid product configurations further comprises the step of conducting fast enumeration on partial configurations.

14. (Currently Amended) The method of claim 1 ~~wherein~~ further comprising the step of defining configuration neighborhoods ~~comprises the step of defining~~ based on a relation structure, wherein the configuration neighborhoods identify at least one valid product configuration captured by another valid product configuration.

15. (Currently Amended) The method of claim 14 wherein the relation[[s]] structure is an upgrade relation that identifies at least one selectable feature having an option that is

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upgradeable for no additional cost to a customer of the product configuration having the upgrade option.

16. (Currently Amended) The method of claim 14 wherein the relation structure is a convert relation that identifies at least one <u>selectable</u> feature having an option that is convertible to another option at a respective conversion cost.

17. (Currently Amended) The method of claim 14 wherein the relation structure is an acceptance relation that identifies at least one <u>selectable</u> feature having an option that is acceptable to a consumer desiring a different option at a respective acceptance value.

18. (Original) The method of claim 17 wherein the acceptance value is a probability that the customer will accept the acceptance option instead of the different option.

19. (Currently Amended) The method of claim 14 wherein the relation structure is an acceptance relation that identifies a plurality of <u>selectable</u> features, each feature having a respective option that is acceptable to a consumer desiring respective different options at a respective acceptance value, the acceptance value being the product of the probabilities that the customer will accept each respective different option.

20. (Original) The method of claim 14 wherein the relation structure identifies at least one valid product configuration that captures another valid product configuration through an upgrade, conversion, or acceptance of at least one option.

21. (Original) The method of claim 1 wherein the product is a manufactured good.

22. (Original) The method of claim 1 wherein the product is a service.

23. (Currently Amended) In a computerized system, a method of ~~identifying~~ generating an optimum subset of product configurations associated with a product, comprising the steps of:

receiving product configuration data representative of a plurality of all possible product configurations capable of manufacture by a company;

receiving historical demand data associated with the plurality of all possible product configurations;

identifying a plurality of selectable features associated with the plurality of all possible product configurations;

identifying a plurality of options associated with each respective selectable feature;

arranging the product configuration data into ~~representing each of the plurality of possible product configurations as an~~ ordered arrays of the selectable features, wherein each ordered array represents one of the plurality of all possible product configurations;

applying mix-and-match rules to the ordered arrays to identif~~ying~~ a plurality of valid ordered arrays representing valid product configurations as a subset of the plurality of all possible product configurations;

defining an optimization model based on achieving a desired objective;

solving the optimization model as a function of the historical demand data to ~~identify~~ generate the optimum subset of valid ordered arrays representing the valid product configurations that achieves the desired objective; and

outputting ~~presenting~~ the generated optimum subset of valid product configurations to the company, which identifies the product configurations the company should manufacture to meet the desired objective.

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24. (Currently Amended) A computerized system for generating ~~identifying~~ an optimum subset of valid product configurations associated with a product, comprising:

a configuration generator for receiving product configuration data, the product configuration data representative of all possible product configurations, each product configuration defined by a plurality of features, each feature having a plurality of options, the configuration generator applying mix-and-match rules to identify a ~~sub~~set of valid product configurations, the configuration generator further representing each of the valid product configurations as an ordered array;

a demand simulator for receiving historical demand data associated with all possible product configurations and calculating relative demand for each of the valid product configurations based on the historical demand data;

a cost calculator for calculating and associating a cost of manufacture for each of the valid product configurations;

a revenue calculator for calculating and associating a revenue potential for each of the valid product configurations;

an objective-based modeler for defining an optimization model and for receiving product configuration information from the configuration generator, the demand simulator, the cost calculator, and the revenue calculator; and

an optimization engine for solving the optimization model based on the received product configuration information and generating ~~presenting~~ the ~~optimal~~ optimum subset of valid product configurations from the set of valid production configurations and for generating ~~presenting~~ costs, revenue, and parts needed for the ~~optimal~~ optimum subset of valid product configurations.

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25. (New) The method of claim 1 wherein the generated optimum subset of valid product configurations comprises the product configurations that a manufacturer should manufacture to meet the desired objective.

26. (New) The method of claim 1 wherein the generated optimum subset of valid product configurations comprises the product configurations that a retailer should offer for sale to customers to meet the desired objective.

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